R E M A R K S

Claims 6-9 and 12-13 are pending in the present application. Claim 6 is amended. No new matter is inserted into the application.

Interview

The Examiner is respectfully requested to contact Kristi L. Rupert, Ph.D. (Reg. No. 45,702) at (703) 205-8000 to arrange for a personal interview upon receipt of the instant Reply.

Advisory Action

In the Advisory Action dated March 7, 2002, the Examiner writes:

> *Claim 6 has been amended to recite "a protein of about 800 amino acids which is encoded by a DNA which hybridizes to a complement of the DNA of SEQ ID NO:1." The specification does not support just any protein that is about 800 amino acids that is encoded by a DNA that hybridizes to a complement of the DNA of SEQ ID NO:1. The specification supports DNA which comprises SEQ ID NO:1 or a variant DNA that hybridizes to said SEQ ID NO:1 (see page 9, lines 5-6). The amendment to claim 6 recited above would also require a new search for proteins of about 800 amino acids which was not in the previous claims.*

On the other hand, the Examiner writes:

> *Applicant's reply has overcome the following rejection(s): IF the amendment was entered the art of Nakao et al. as applied to the full length of SEQ ID NO:1 and 2 would be withdrawn.*

As noted above, the Examiner agrees that Nakao et al. fails to disclose SEQ ID NOs: 1 and 2. As such, Applicants submit that the anticipation and obviousness rejections over Nakao et al., as applied to the full-

length sequences SEQ ID NOs:1 and 2, are overcome with the filing of this RCE.

However, it appears that Examiner takes issue with section (c) of claim 6, which recited a protein of about 800 amino acids which is encoded by a DNA which hybridizes to a complement of the DNA of SEQ ID NO:1 under stringent hybridization conditions comprising 6xSSC, 50% formamide, and 0.5% SDS and a temperature of 42^{0}C. Specifically, the Examiner asserts that a sequence which hybridizes to the complement of SEQ ID NO:1 is not supported by the specification. Applicants respectfully disagree with the Examiner's assertions. As is explained below, a sequence which hybridizes to SEQ ID NO:1 or to the complement of SEQ ID NO:1 is supported by the specification.

First, Applicants make note that SEQ ID NO:1 is, in actuality, a double stranded sequence. In order to fully clarify this fact, Applicants submit herewith a substitute Sequence Listing wherein SEQ ID NO:1 is described as double stranded. Also submitted herewith is a disk copy of the substitute Sequence Listing. The disk copy of the substitute Sequence Listing, file "2002-04-22 0020-4491P seq list.txt", is identical to the paper copy, except that it lacks formatting. The substitute Sequence Listing does not introduce new matter, because SEQ ID NO:1 (previously SEQ ID NO:2) was listed as a double-stranded sequence in the Sequence Listing originally filed on December 7, 1998.

However, the substitute Sequence Listing filed on July 20, 2000, wherein SEQ ID NO:2 was changed to SEQ ID NO:1, only lists the sense strand of the DNA sequence, in order to be in accordance with the USPTO Sequence Listing rules:

> 37 CFR 1.822(c)(5) provides that nucleotide sequences shall only be represented by a single strand, in the 5' to 3' direction, from left to right. That is, double stranded nucleotides shall not be represented in the "Sequence Listing." A double stranded nucleotide may be represented as two single stranded nucleotides, and any relationship between the two may be shown in the drawings.

The fact that SEQ ID NO:1 inherently contains both the sense and anti-sense DNA strands is supported by the "Hints for Compliance" section of the Sequence Listing rules:

> The single stranded nucleotide depicted in the "Sequence Listing" may represent a strand of a nucleotide sequence that may be single or double stranded which may be, further, linear or circular.

Thus, SEQ ID NO:1 is a double stranded sequence containing both the sense and anti-sense DNA strands. It follows, therefore, that a protein encoded by a DNA which hybridizes to SEQ ID NO:1 may either hybridize to the sense strand or anti-sense DNA strand of SEQ ID NO:1. To fully clarify this fact, section (c) of claim 6, as amended, reads as follows:

> (c) a protein of about 800 amino acids which is encoded by a DNA which hybridizes to [a complement of the DNA of] SEQ ID NO:1 under stringent hybridization conditions comprising 6xSSC, 50% formamide, and 0.5% SDS and a temperature of 42°C,

Applicants note that the claimed DNA in the above amended section (c), can actually be a variant of SEQ ID NO:1 or the complement of SEQ ID NO:1 for the following reasons. Because SEQ ID NO:1 is a double stranded sequence, then a DNA which hybridizes to it may hybridize with *either* the sense or the antisense strands. Therefore, the claimed sequence is actually a variant of the sense strand of SEQ ID NO:1 (when the DNA hybridizes to the antisense strand of SEQ ID NO:1) or the complement of the sense strand of SEQ ID NO:1 (when the DNA hybridizes to the sense strand of SEQ ID NO:1). As such, active variants of SEQ ID NO:1, as well as complementary sequences of SEQ ID NO:1, are encompassed by the claim scope of claim 6.

For all of the above reasons, Applicants respectfully submit that, contrary to the Examiner's assertions, a sequence which hybridizes to SEQ ID NO:1, or the complement of SEQ ID NO:1 is fully supported by the specification. As such, claim 6 should not be considered new matter and should be found allowable.

Summary

All of the present claims define patentable subject matter such that this application should be placed into condition for allowance. Early and favorable action on the merits of the present application is thereby requested.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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By _____ #32,858
for Gerald M. Murphy, Jr., #28,977

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Attachment: Version with Markings to Show Changes Made

Version with Markings to Show Changes Made

IN THE CLAIMS:

The claims have been amended as follows:

Claim 6 (Three Times Amended)

An isolated tumor antigen protein selected from the group consisting of:

(a) a protein comprising an amino acid sequence shown in SEQ ID NO:2;

(b) a protein encoded by a DNA comprising a nucleotide sequence shown in SEQ ID NO:1; and

(c) a protein of about 800 amino acids which is encoded by a DNA which hybridizes to [a complement of the DNA of] SEQ ID NO:1 under stringent hybridization conditions comprising 6xSSC, 50% formamide, and 0.5% SDS and a temperature of 42^{0}C,

wherein said protein yields, through intracellular decomposition, peptide fragment(s) which binds to major histocompatibility complex (MHC) class I antigen and is recognized by cytotoxic T lymphocytes (CTLs) in such binding state.